Pre-Hospital Laryngeal Mask Airway Insertion
Program Overview

Program Title

"Pre-Hospital Laryngeal Mask Airway Insertion"

Student Eligibility

- Emergency Medical Technicians certified as Intermediates or Paramedics to perform endotracheal intubation in the Commonwealth of Massachusetts.

Course Format

- Although this material may be presented in a number of formats, a lecture / discussion model with practical scenario is given here. This program may be combined with other standing programs such as ACLS, PALS, or the Commonwealth's ALS Interfacility Transfer Training Program.

Objectives

Upon completion of the training program, the provider will be able to:

- Discuss the Massachusetts Pre-Hospital Treatment Protocol concerning Laryngeal Mask Airway (LMA) tube insertion
- State the indications and contraindications of placing a LMA.
- Describe the procedure of placing a LMA.
- Demonstrate the placement of a LMA tube in an intubation manikin in a classroom setting.
- Successfully place the LMA device in a **mannequin** under the direct supervision of a **licensed practitioner** authorized to use the device.
- **AND/OR** Successfully place the LMA device in an **operating room** setting under the direct supervision of a qualified MD, CRNA or other licensed practitioner authorized to use the device.

Outline

- See the attached Program Outline

Teaching Methods

- Lecture / Discussion
- Video Tape Presentation
- Practical Skill Sessions / Stations
- Open Question and Answer Periods
- **Clinical Application in a Mannequin (Required)**
- Clinical Application in Operating Room (**Optional**)

Faculty

- Any Massachusetts provider currently authorized to perform the skill of Laryngeal Mask Airway insertion. This may include MD, PA, or RN. EMT-Paramedics or EMT-Intermediates who have previously completed this program are also eligible.

Pre-Hospital Laryngeal Mask Airway Insertion
References

Texts:

- Brady Basic Trauma Life Support, Fourth Edition, Campbell, John E., Prentice-Hall, Inc., 2000, pages 58-59, 292-294
- Brady Paramedic Care: Principles & Practice, Volume 1: Introduction, Bledsoe, Bryan E., Porter, Robert S., Cherry, Richard A., Prentice-Hall, Inc., 2000, pages 573-574.
- Emergency Medicine: Concepts and Clinical Practice, Fourth Edition, Rosen, Peter, Editor-in-Chief, 1998, pages 14-15.
- Guidelines 2000 for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care, An International Consensus on Science, International Liaison Committee on Resuscitation, Supplement to Circulation, Volume 102, Number 8, August 22, 2000, pages I-98-99.
- LMA Classic and LMA Flexible Instruction Manual, Rev. B, Brain A., Denman W., Goudsouzian N., LMA North America, Inc., Part Number 3000192, March 2000.
- LMA Fastrach Instruction Manual, Rev. A, Brain A., Verghese C., LMA North America, Inc., Part Number 3000158, August 1998.
- Paramedic Textbook, Second Edition, Sanders, Mick J., Mosby, Inc., 2000, pages 412.
- PHTLS Basic and Advanced Prehospital Trauma Life Support, Forth Edition, Prehospital Trauma Life Support Committee of the National Association of Emergency Medical Technicians in cooperation with the Committee on Trauma of the American College of Surgeons, Mosby, Inc., 1999, page 67.
- Textbook of Advanced Cardiac Life Support, Cummins, Richard O., Editor, America Heart Association, 1997, page 2-11.

Journal Articles:

- "A comparison of two airway aids for emergency use by unskilled personnel, the Combitube and laryngeal mask," Yardy N, Hancox D, Strang T, Anaesthesia, 1999 Feb; 54(2): 181-3.
- "The PTL, Combitube, laryngeal mask, and oral airway: a randomized prehospital comparative study of ventilatory device effectiveness and cost-effectiveness in 470 cases of cardiorespiratory arrest," Rumball CJ, MacDonald D, Prehospital Emergency Care, 1997 Jan-Mar; 1(1) 1-10.
- "Airway management during cardiopulmonary resuscitation – a comparative study of bag-valve-mask, laryngeal mask airway, and combitube in a bench model," Doerges V, Sauer C, Ocker H, Wenzel V, Schmucker P, Resuscitation, 1999 Jun; 41(1): 63-9.
- "Use of Intubating Laryngeal Mask Airway by Medical and Non-medical Personnel," Levitan R, Ochroch E, Stuart S, Hollander J, American Journal of Emergency Medicine, 2000 Jan; 18(1): 12-16.

Video:

- "LMA Insertion Video, Rev. A," LMA North America, Inc., Part Number 3000200.
- "LMA-Fastrach Instructional Video, Rev. A," LMA North America, Inc., Part Number 3000175.
- "Taking Care of Reusable LMA Airways, Rev. A," LMA North America, Inc., Part Number 9000005.

Pre-Hospital Laryngeal Mask Airway Insertion
Program Outline

1. Program Overview (5 to 15 minutes)
- 1.1. Student Registration and Administrative Concerns
- 1.2. Introduction of Faculty
- 1.3. Program Objectives
- 1.4. Program Outline
- 1.5. Program Duration

2. Review of Massachusetts Protocol concerning Laryngeal Mask Airways (10 to 30 minutes)
- 2.1. Statewide Treatment Protocols
- 2.2. Indications
  - 2.2.1. Airway control in the absence of other effective methods.
- 2.3. Contraindications
  - 2.3.1. The manufacturer of the LMA lists the following contraindications:
    - 2.3.1.1. The LMA does not protect the airway from the effects of regurgitation and aspiration.
    - 2.3.1.2. Patients who have not fasted or whose fasting cannot be confirmed.
    - 2.3.1.3. Patients with hiatal hernia unless effective measures have been taken to empty their stomach contents beforehand.
    - 2.3.1.4. Patients with fixed pulmonary compliance, such as patients with pulmonary fibrosis.
    - 2.3.1.5. Adult patients who are unable to understand instructions or cannot adequately answer questions regarding their medical history, since such patients may be contraindicated for LMA use.
    - 2.3.1.6. NOTE: When used in the profoundly unresponsive patient in need of resuscitation or in a difficult airway patient on an emergency pathway (i.e. “cannot intubate, cannot ventilate”), the risk of regurgitation and aspiration must be weighed against the potential benefit of establishing an airway. The LMA should not be used in the resuscitation or emergency situation in patients who are not profoundly unconscious and who may resist LMA insertion. In patients with severe oropharyngeal trauma, the risk of exacerbating the condition must be weighed against the potential benefit of establishing an airway.
  - 2.3.2. Warnings, Cautions, and Adverse Effects

3. Review of local policies, including documentation (5 to 15 minutes)
- 3.1. Local Policies inserted here.
- 3.2. Local documentation policies inserted here.
  - 3.2.1. Documentation may include:
    - 3.2.1.1. Time procedure was performed
    - 3.2.1.2. LMA type and size utilized
    - 3.2.1.3. Tube placement check, and by what manner
    - 3.2.1.4. Degree of difficulty encountered
    - 3.2.1.5. Complications encountered
    - 3.2.1.6. Name of provider performing procedure

4. Review of pertinent anatomy and physiology (15 minutes)
- 4.1. Upper airway structures
- 4.2. Upper gastrointestinal tract
- 4.3. Airway grading

5. LMA manufacturer’s video instruction (15 to 45 minutes)
- 5.1. Video(s) appropriate to the device(s) to be utilized.

6. Equipment introduction and Procedure demonstration (15 to 45 minutes)

6.1. Equipment
- 6.1.1. Personal protective equipment
- 6.1.2. Laryngeal Mask Airways of appropriate sizes
- 6.1.3. Syringe of appropriate volume for selected device
- 6.1.4. 10 or 12 Fr suction catheter
- 6.1.5. Water-soluble lubricant
- 6.1.6. Adhesive tape
- 6.1.7. Bag Valve Mask resuscitator
- 6.1.8. Oxygen source
- 6.1.9. Suction device

6.2. Standard Procedure (sharply abbreviated here – see manufacturer's directions for use.)
- 6.2.1. Ventilate the patient
- 6.2.2. Select the correct size tube
- 6.2.3. Prepare the LMA for use
  - 6.2.3.1. Perform LMA performance tests as specified by manufacturer
  - 6.2.3.2. Tight deflation of the LMA cuff without distal wrinkles
  - 6.2.3.3. Spare LMA prepared and ready for use
- 6.2.4. Lubricate tube with water soluble lubricant
- 6.2.5. Position the patient's head
- 6.2.6. Properly orient and grasp the tube
- 6.2.7. Insert LMA upward against the hard palate, and push the device inwards and backward with the index finger. Advance until definite resistance is felt. Do not use force.
- 6.2.8. Use the other hand to press down on the LMA tube before removing index finger.
- 6.2.9. Ensure that the black line on the airway tube is oriented anteriorly toward the upper lip.
- 6.2.10. Inflate the cuff with just enough air to obtain a seal. Varies with cuff size and patient anatomy. Do not hold the tube during cuff inflation.
- 6.2.11. Ventilate the patient
- 6.2.12. Auscultate breath sounds and confirm placement
- 6.2.13. Insert a bite block and secure the tube.
- 6.2.14. Monitor end-tidal carbon dioxide level.
- 6.2.15. Document the procedure.

6.3. Thumb Insertion Procedure.

6.4. Review of potential problems with LMA insertion.

6.5. Review of manufacturer's cautions and warnings.

6.6. Special patient populations
- 6.6.1. Pediatric patients
- 6.6.2. Difficult airway
- 6.6.3. LMA and failed intubation
- 6.6.4. LMA use and gastric drainage

6.7. LMA Flexible

6.8. LMA Fast-Trach

7. Student practical skill sessions/stations (20 to 60 minutes)

7.1. Recommended one instructor per six to eight students and one training manikin capable of accepting a LMA.

7.2. Skill sessions should be scenario-based (see attached sample cases.)

7.3. Larger groups may benefit from station rotation in timed intervals.

8. Written and/or Practical Examination (30 minutes)

9. Review, Questions and Answers (15 minutes)

10. Optional Clinical Experience (8 hours)

10.1. The participant will complete eight hours of clinical observation time in an operating room setting approved by the Ambulance Service Medical Director
10.2. The participant will successfully place the LMA device in three patients in an operating room setting under the direct supervision of a qualified MD, CRNA or other licensed practitioner authorized to use the device.
10.3. The participant will document this clinical experience.

Total Program Time **Lecture / Didiactic: 130 to 270 minutes**
Optional: Clinical: 8 hours

Pre-Hospital Laryngeal Mask Airway Insertion
Sample Cases

Case One
A 37-year-old female patient collapsed in her living room. She is in cardiac arrest and routine ACLS care is in progress. You have been unable to intubate the patient's tracheal after multiple attempts, and your attempts at bag-valve-mask ventilation are inadequate. Using the manikin and materials provided, describe and perform all airway maintenance procedures indicated by Massachusetts Protocols.

Case Two
A 15-year-old female pedestrian was struck by a motor vehicle at a moderate speed. She unconscious to deep painful stimuli and is suffering from severe facial trauma. Your efforts at maintaining the patient's airway with BLS techniques and generous suctioning are inadequate. The patient is approximately 5 feet tall. Using the manikin and materials provided, describe and perform all airway maintenance procedures indicated by Massachusetts Protocols.

Case Three
You are called to the local recreational center where the lifeguards have removed a ten-year-old male patient from the pool. You find him deeply unconscious, without a gag reflex. His respirations number 4 per minutes and he has a blood pressure of 150/100 mmHg. He has been c-spine immobilized prior to your arrival. The patient is over four feet tall. As you prepare to intubate the patient, you find your laryngoscope is not operational. Using the manikin and materials provided, describe and perform all airway maintenance procedures indicated by Massachusetts Protocols.

Case Four
You have been unable to intubate a 55 year-old male patient unconscious after receiving a gunshot wound to the thorax. You are having difficulty maintaining the patient's airway using BLS methods. Using the manikin and materials provided, describe and perform all airway maintenance procedures indicated by Massachusetts Protocols.

Case Five
A 31-year-old male patient was involved in a motorcycle accident. He does not respond verbally, is bleeding from facial injuries, and is combative while lying supine on the roadside. His vital signs are BP 88/P, P134, and R44. Using the manikin and materials provided, describe and perform all airway maintenance procedures indicated by Massachusetts Protocols.

Pre-Hospital Laryngeal Mask Airway Insertion Performance Checklist

Provider's Name_____ Date_____

Mass. EMT Number #_____ Level (circle) EMT EMT-I EMT-P

Service _____

When demonstrating the insertion of a Laryngeal Mask Airway the provider should:

	Pass	Fail
Verbalizes the indications for the Airway	⬭	⬭
Verbalizes the contraindications for the Airway	⬭	⬭
Proper use of PPE	⬭	⬭
Assembles all necessary equipment	⬭	⬭
Selects appropriate LMA size	⬭	⬭
Ventilates patient prior to insertion	⬭	⬭
Properly prepares LMA for use, including proper cuff deflation	⬭	⬭
Lubricates tube on posterior surface only	⬭	⬭
Opens and clears airway and positions head properly	⬭	⬭
Inserts device properly into oropharynx and advances correctly	⬭	⬭
Inflates cuff / pilot balloon to achieve proper seal	⬭	⬭
Ventilates effectively and auscultates breath sounds	⬭	⬭
Verbalizes appropriate breath sounds for correct placement	⬭	⬭
Properly utilizes bite block device	⬭	⬭
Properly secures device in place	⬭	⬭
Utilizes end-tidal carbon dioxide detection device	⬭	⬭
Verbalizes proper suctioning method	⬭	⬭
Final Performance	**PASS** ⬭	**FAIL** ⬭

Comments_____

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Instructor / Examiner Print Name_____ _____
Credentials

Instructor / Examiner Signature_____ _____
Date